1. This polynomial is reducible: $p(x) = x^5 + x^4 + 1$. Discover the period(s) of the sequence produced by the LFSR using it as its connection polynomial.

2. Prove that $p(x) = x^{10} + x^3 + 1$ is primitive over GF(2).

3. Consider the following sequence, and construct the smallest LSFR producing this sequence using the Berlekamp-Massey algorithm: 1001101001000010101110110001111100110